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Abstract for ION Paper

Earthquake Research Yields Manhour-Efficient Point Positioning with Millimeter Accuracy

by Andrea Donnellan (JPL), Ken Hurst (JPL), Carl Carter (AOA) and Patricia Romanowski (AOA)

This paper presents a review of the methodology used to perform high-precision geodetic observations in the southern California seismic survey areas. Surveys to millimeter-level accuracy can be performed very quickly due to the availability of very low noise receivers, a network of well-established fixed receivers, and powerful post-processing software. The highly active southern California region is constantly monitored using fixed and portable TurboRogue receivers occupying numerous sites. A demonstration of the speed and accuracy of the methodology is illustrated by results from surveys performed immediately after the January earthquake in Northridge, CA. In the five days following the temblor, rapid surveys were performed at ten sites, with results proving to be reproducible to 1.5 mm.

Technical innovations
Suitable for

Session A2: GPS for Surveying: New Developments and Applications

One technical innovation presented in this paper is the description of quickly achievable, accurate surveying at multiple points. Due to the urgency of collecting data after a major earthquake, geodetic survey procedures were executed which produce accurate results in the least amount of time. These procedures can be adopted by FAA, DOT or other static survey activities of any size, in order to maximize productivity and accuracy and minimize crew size, campaign length and program costs.

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